

Date: Wednesday, 1/25/2006 1:15:31 PM
 User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 206L FWD X-TUBE
Job Number	: 25606		
Estimate Number	: 10553		
P.O. Number	: N/A	Part Number	: D206667103
This Issue	: 1/25/2006 S.O. No. : N/A	Drawing Number	: D206-667-143 REV B
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: 1/11/06 Type : LANDING GEAR	Drawing Revision	: B
Previous Run	: 25605	Material	: N/A
Written By	: <u>SKR</u> (COMMENT BELOW)	Due Date	: 2/28/2006 Qty: 1 Um: Each
Checked & Approved By	: <u>06.01.27</u>		
Comment	: Est Rev: F 06.09.01 Add holes for compatibility with Bell Skid tubes KJ/JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0

DC

DOCUMENT CONTROL



06/02/08

KS-06-00

Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D206-667-103 CHG002

Per Attached A

2.0

D6002115

Crosstube material



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number

Description Batch

1 D6002-115

Crosstube

M19511

Check OD = 2.250"; ID = 1.750"

BG 06.02.26

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA087

2-Turn first side as per Folio FA087

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143.

BG 06.02.27 1

4.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

BG 06.02.27 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206-667-103 PAR #: N/A Fault Category: Root - LG NCR: Yes No DQA: JA Date: 06.07.20
 QA: N/C Closed: JA Date: 06.07.20

NCR: 25606		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
<u>06.04.07</u>	<u>3</u>	Dimension 2.019 is 2.017 " 2.058 is 2.053 " 2.097 is 2.092 Part under tolerance, see attached FAI sheet	<u>CP</u> <u>06.04.07</u> per QSI 042	Part is OK. See attached analysis & DS email for substantiation	<u>N/A.</u>	<u>06.04.17</u>	<u>CP</u> <u>06.04.07</u> pw QSI 042	<u>06.04.17</u>

NOTE: Date & initial all entries

Date: Wednesday, 1/25/2006 1:15:31 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA087

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143.

3-Polish entire outside surface of crosstube

4-Remove sand and plugs

5-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-143

36 06-02-27

1

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

36 06-02-27

1

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

En 06/04/17

1

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

BT 06-04-17

9.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D206-667-143 using CNC bender program 206L-fw and Folio FT017

DP06-4-18

10.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

06-04-20

11.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill all (3) top holes.

06-04-24

2-Drill and Ream all holes in tube to finish size using drill Jig DT8541 & DT8542 as per Dwg

06-04-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

D206-667-143 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8541 & DT8542 as per Dwg D206-667-143

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-143.

8-C'sink holes as per Dwg D206-667-143. Allow rivet to sit below surface to compensate for paint.

9-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143

pm 06-04-240

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

13.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

pm 06-04-240

14.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

15.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: 1078 LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

CY 06/04/25

16.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

Pa 4/5/01

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

17.0

QC6

DIMENSIONAL CHECK



2008-02 ①



Comment: Inspect for damage & ensure results are as per Dwg D206-667103

18.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

FL 06 07 06 ①

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

M 06 07 11 ①

19.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Wrap in plastic bag to protect from scratches

2007-12 ①

20.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2138 f(s)/Unit Total: 1.2138 f(s)

Pick:

Qty Part number Description Batch

2 D2856-400(Cut to 6.94") Abrasion Strip *B27545 27 06-07-12*

21.0

D2873043

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2873-043 Nut Plate *B25052 25 06-07-12*

22.0

D2873045

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2873-045 Nut Plate *B25053 25 06-07-12*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

23.0

D28911

Support 2.25 dia



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2891-1

Support

B19647

25 06-07-12

24.0

MS20601AD4W8



Comment: Qty.: 14.0000 Each(s)/Unit Total: 14.0000 Each(s)

Pick:

Qty Part number Description Batch

14 MS20601AD4W8

Rivet

M18523

27 06-07-12

25.0

MS2192020

Clamp



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-20

Clamp

M13791

25 06-07-12

26.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579. .Note: (3) top holes should be facing up.

2-Install supports and clamps as per Dwg D4206-667-143. Torque clamps to 80-100 in lb

3-Install nut plates as per Dwg D206-667-143. Touch-up rivet heads with Imron paint.

27 06-07-13

27.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 6-7-13

28.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

29.0

AN57A

Bolt



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

10 AN5-7A

Bolt

30.0

AN530A

BOLT



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

4 AN5-30A

Bolt

31.0

AN960JD516

Washer



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

10 AN960JD516

Washer

32.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

33.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D206-667-103

Location: _____

PPP Rev: _____

34.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

Job Completion



See 2 Hatched

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: 12 Date: 26/07/24
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 3/29/2006 7:57:20 AM
 User: Linda Lacelle

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 206L FWD X-TUBE
Job Number	: 25606		
Estimate Number	: 10553		
P.O. Number	:	Part Number	: D206667103
This Issue	: 3/29/2006	S.O. No.	:
Prsht Rev.	: NC	Drawing Number	: D206-667-143 REVB
First Issue	: 1/25/2006	Project Number	: N/A
Previous Run	: 25605	Drawing Revision	: B
	Type : LANDING GEAR	Material	:
Written By	:	Due Date	: 2/28/2006
Checked & Approved By	:	Qty:	1
Comment	: Est Rev:F 05.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM	Um:	Each

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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28.0	PACKAGING 1	PACKAGING RESOURCE #1
------	-------------	-----------------------



Comment: PACKAGING RESOURCE #1
 Pick Packing Kit

29.0	AN532A	Bolt
------	--------	------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
 Bolt

m101281 ✓

30.0	MS21042L5	Nut
------	-----------	-----



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
 Nut

m17694 ✓

31.0	AN57A	Bolt
------	-------	------



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)
 Pick:Packing Kit

Qty Part number	Description	Batch
10 AN5-7A	Bolt	<i>m18536 ✓</i>

32.0	AN530A	BOLT
------	--------	------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
 Pick:Packing Kit

Qty Part number	Description	Batch
4 AN5-30A	Bolt	<i>m19512 ✓</i>

Date: Wednesday, 3/29/2006 7:57:20 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206L FWD X-TUBE

Job Number: 25606

Part Number: D206667103

Job Number:



Seq. #:

Machine Or Operation:

Description :

33.0

AN960JD516

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total: 18.0000 Each(s)

Pick: Packing Kit

Qty Part number Description Batch

18 10 AN960JD516 Washer M101369

AL 06/07/18 (1)

34.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

AL 06/07/18 (1)

35.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D206-667-103

Location: _____

PPP Rev: B

AL 06/07/18 (1)

36.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

AL 06.07.20

Job Completion



AL 06.07.19

DART AEROSPACE LTD	Work Order: 25606
Description: Crosstube Assembly (206L High Fwd)	Part Number: D206-667-143
Inspection Dwg: D206-667-143 Rev: A2	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.242	✓			
	1.982	+0.005/-0.000	1.982	✓			
	2.019	+0.005/-0.000	2.017		✓		-0.002
	2.058	+0.005/-0.000	2.053		✓		-0.005
	2.097	+0.005/-0.000	2.092		✓		-0.005
	2.136	+0.005/-0.000	2.136	✓			
	2.176	+0.005/-0.000	2.179	✓			
	2.201	+0.005/-0.000	2.204	✓			
	0.125	+/-0.010	.125	✓			
	0.400 x 30°	+/-0.010	.400	✓			
	R0.063	+/-0.010	.063	✓			
	R0.500	+/-0.010	.500	✓			
	4.438	+/-0.030	4.438	✓			
SIDE B	104.98	+/-0.020	104.98	✓			
	2.240	+0.005/-0.000	2.245	✓			
	1.982	+0.005/-0.000	1.987	✓			
	2.019	+0.005/-0.000	2.024	✓			
	2.058	+0.005/-0.000	2.062	✓			
	2.097	+0.005/-0.000	2.092	✓			
	2.136	+0.005/-0.000	2.141	✓			
	2.176	+0.005/-0.000	2.181	✓			
	2.201	+0.005/-0.000	2.205	✓			
	0.125	+/-0.010	.125	✓			
	0.400 x 30°	+/-0.010	.400	✓			
	R0.063	+/-0.010	.063	✓			
	R0.500	+/-0.010	.500	✓			
	4.438	+/-0.030	4.438	✓			

Measured by: BG	Audited by: En	Prototype Approval:	N/A
Date: 06.02.27	Date: 06/04/17	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	04.05.06	New Issue (P/O D206-667-103)	KJ/RF	



DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED HDS	APPROVED HDS	DRAWING NO. D206-667-143	REV. B SHEET 1 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (206L HIGH FWD)	SCALE NTS
A	00.11.17	NEW ISSUE	
B	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED
05.07.26

Qty	Part Number	Description
X	D206-667-143	CROSSTUBE ASSEMBLY (206L HIGH FWD)
1	D6002-115	CROSSTUBE
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
2	D2856-400-694	ABRASION STRIP
2	D2891-1	SUPPORT
14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
4	MS21920-20	CLAMP


GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 104.98±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTIONAL TO SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 25606

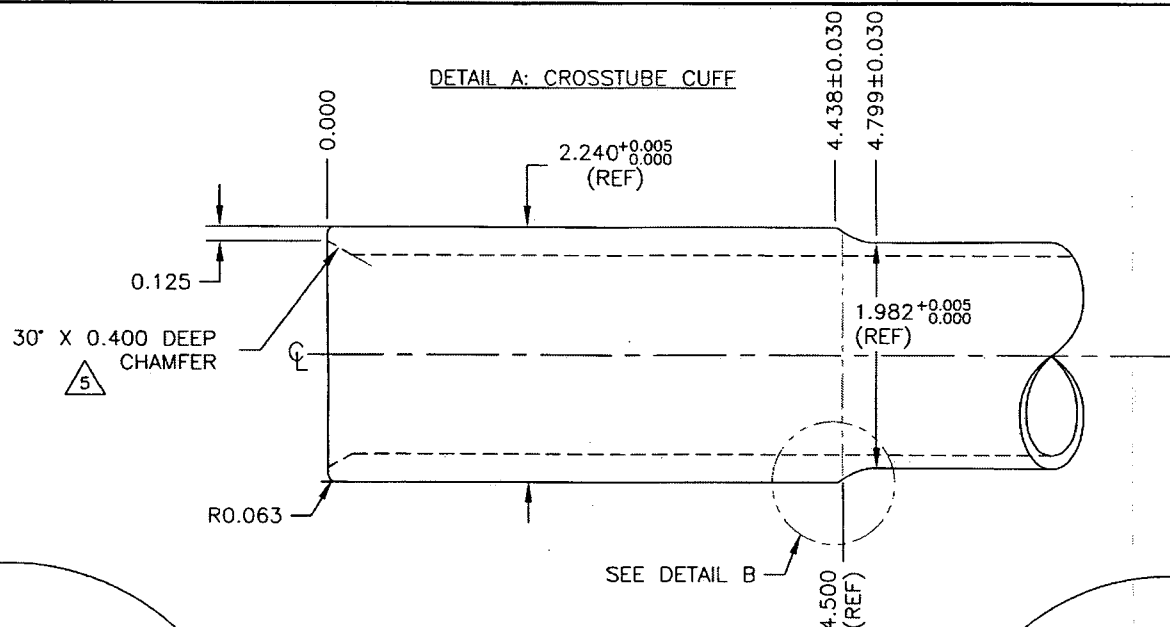
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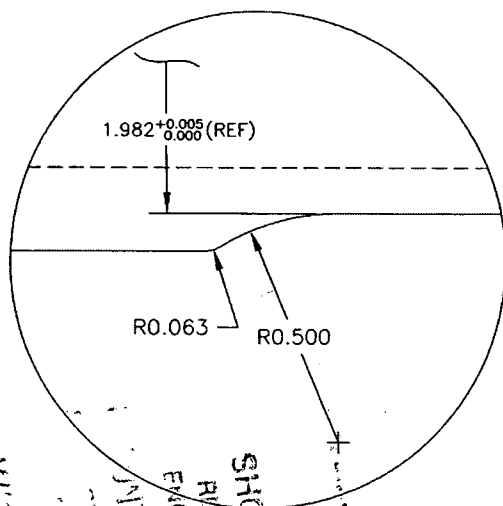
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RELEASED
05.07.26

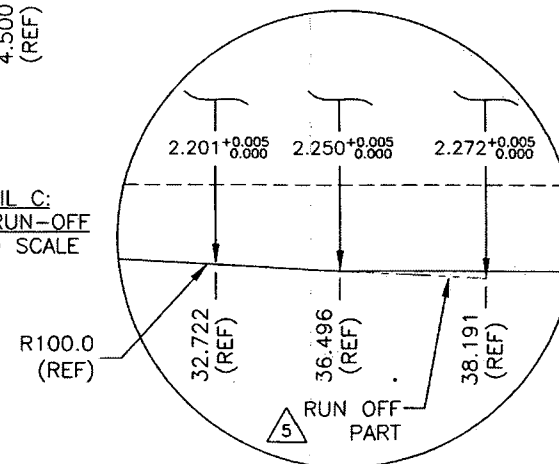
DETAIL A: CROSSTUBE CUFF



DETAIL B: CUFF
TRANSITION
SCALE 4:1



DETAIL C:
TAPER RUN-OFF
NOT TO SCALE



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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	PH	APPROVED	PH	DRAWING NO.	REV. B
		DATE	05.07.26			D206-667-143	SHEET 3 OF 3
						TITLE	SCALE
						CROSSTUBE ASS'Y (206L HIGH FWD)	1:1

NO. 25606
WIPON OBJECT
RETURN TO
ENGINEERING
CONTROLLED COPY
TO GOVERNMENT

Chris Provencal

From: David Shepherd [davids@dartaero.com]
Sent: April 6, 2006 4:50 PM
To: Chris Provencal
Cc: Linda Lacelle
Subject: Re: NCR for D206-667-143

Chris,

I agree with the calculations you sent by fax.
Therefore, D206-667-143 B25606 is an acceptable deviation.
Please attach a copy of your analysis as well as a copy of this email to the work order.

With respect to D206-667-143 B25605, please do a similar calculation and attach it to the work order.
If you get a positive margin, you can use this email as proof of my acceptance of the part.

David

----- Original Message -----

From: "Chris Provencal" <cprovencal@dartaero.com>
To: "David Shepherd (E-mail)" <davids@dartaero.com>
Sent: Thursday, April 06, 2006 10:53 AM
Subject: NCR for D206-667-143

> David,
>
> I sent you a fax regarding some under toleranced crosstubes. I talked to
> you before about this (about a month ago), the SR shows negative margins
> so
> per your suggestion I compared the bending moments to the bending moments
> at
> the support. I figured you could sign the fax if you agreed with it and
> I'd
> attach it to the work orders, that way there's two signatures saying they
> agree with the calculation.
>
> Sincerely,
> Chris Provencal
> DART Aerospace Ltd.
> Email..cprovencal@dartaero.com
> Phone...613-632-3336
> Fax.....613-632-4443
>
>

CP 06.04.07

This calculation looks at a D206-667-143 xtube (b/n 25606) that is under tolerance.

Geomerty at support:

$$2.250'' \text{ OD} \times 1.750'' \text{ ID}, I_1 = \pi/64(2.250^4 - 1.750^4) = 0.798 \text{ in}^4$$

$$\text{Distance from skidtube center to edge of support, } d_1 = 27.884''$$

At undertolerance location A:

$$2.092'' \text{ OD} \times 1.750'' \text{ ID}, I_A = \pi/64(2.092^4 - 1.750^4) = 0.480 \text{ in}^4$$

$$\text{Distance from skidtube center to location A, } d_A = 12.537''$$

At undertolerance location B:

$$2.053'' \text{ OD} \times 1.750'' \text{ ID}, I_B = \pi/64(2.053^4 - 1.750^4) = 0.412 \text{ in}^4$$

$$\text{Distance from skidtube center to location B, } d_B = 9.599''$$

At undertolerance location C:

$$2.017'' \text{ OD} \times 1.750'' \text{ ID}, I_C = \pi/64(2.017^4 - 1.750^4) = 0.352 \text{ in}^4$$

$$\text{Distance from skidtube center to location C, } d_C = 6.660''$$

Can't have more vertical force than what the support allows (support provides the actual force), but actual sections near cuff should allow for more (undertolerance section is allowable)

$$\text{Allowable/Actual bending} \Rightarrow F_{TU} = Mc/I = Fdc/I \Rightarrow F_{ABC}/F_1 = (I_{ABC} \cdot d_1 \cdot c_1) / (I_1 \cdot d_{ABC} \cdot c_{ABC})$$

$$MS_A = (0.480 \cdot 27.884 \cdot 1.125) / (0.797 \cdot 12.537 \cdot 1.046) - 1 = 0.44$$

$$MS_B = (0.412 \cdot 27.884 \cdot 1.125) / (0.797 \cdot 9.599 \cdot 1.027) - 1 = 0.65$$

$$MS_C = (0.352 \cdot 27.884 \cdot 1.125) / (0.797 \cdot 6.660 \cdot 1.009) - 1 = 1.06$$

For D206-667-143 (b/n 25605) that is undertolerance at cuff:

At undertolerance location D:

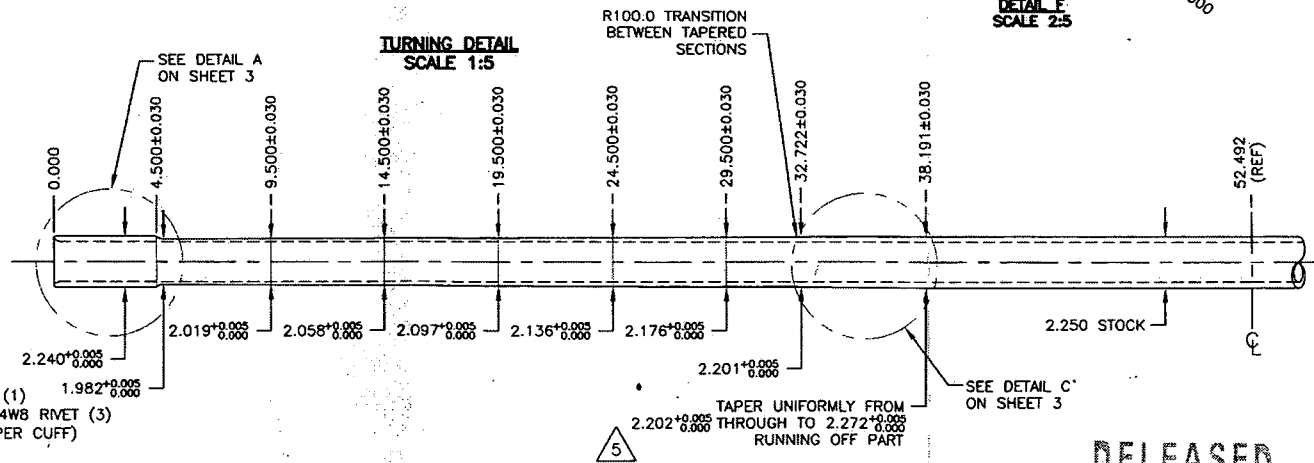
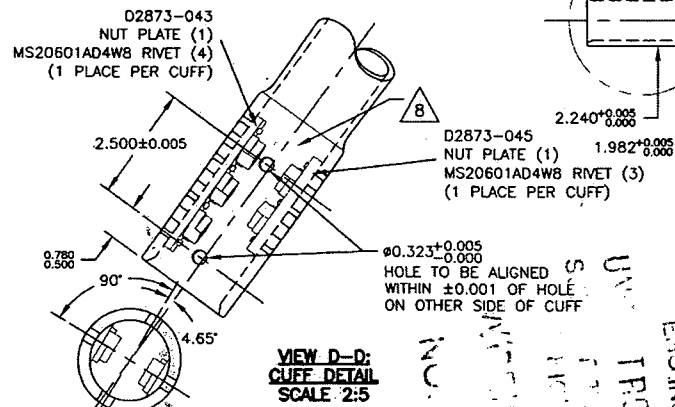
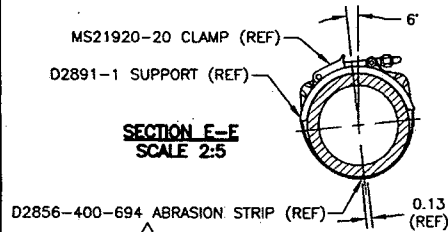
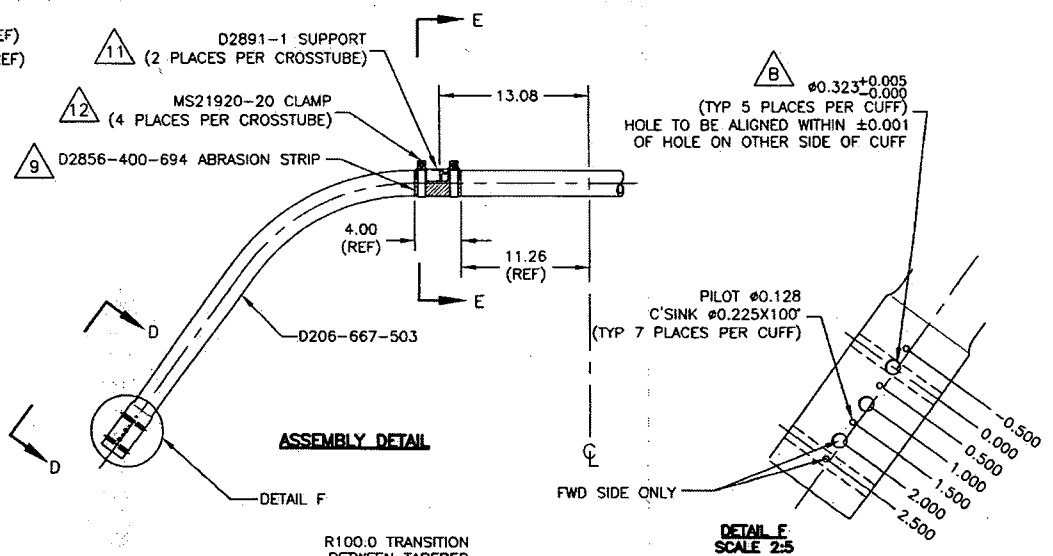
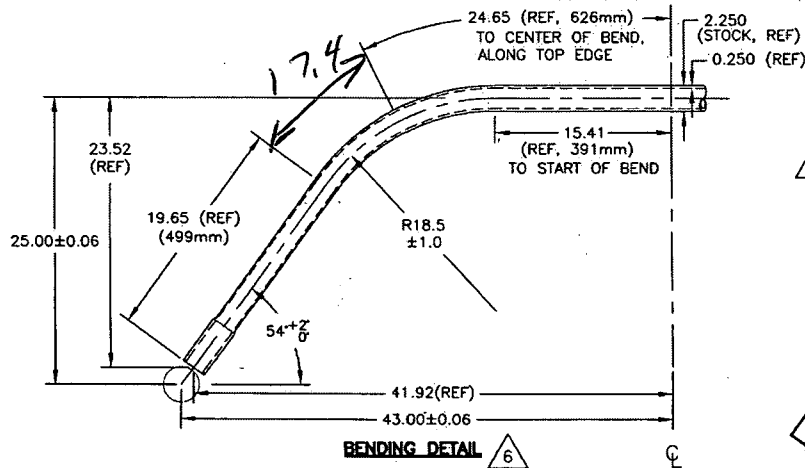
$$2.238'' \text{ OD} \times 1.750'' \text{ ID}, I_D = \pi/64(2.238^4 - 1.750^4) = 0.771 \text{ in}^4$$

$$\text{Distance from skidtube center to location D, } d_D = 3.721''$$

$$MS_D = (0.771 \cdot 27.884 \cdot 1.125) / (0.797 \cdot 3.721 \cdot 1.119) - 1 = 6.29$$

MARGINS positive
∴ parts are OK

CP 06.04.07

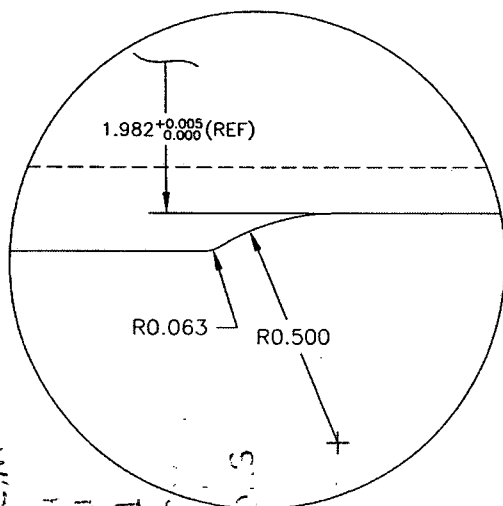
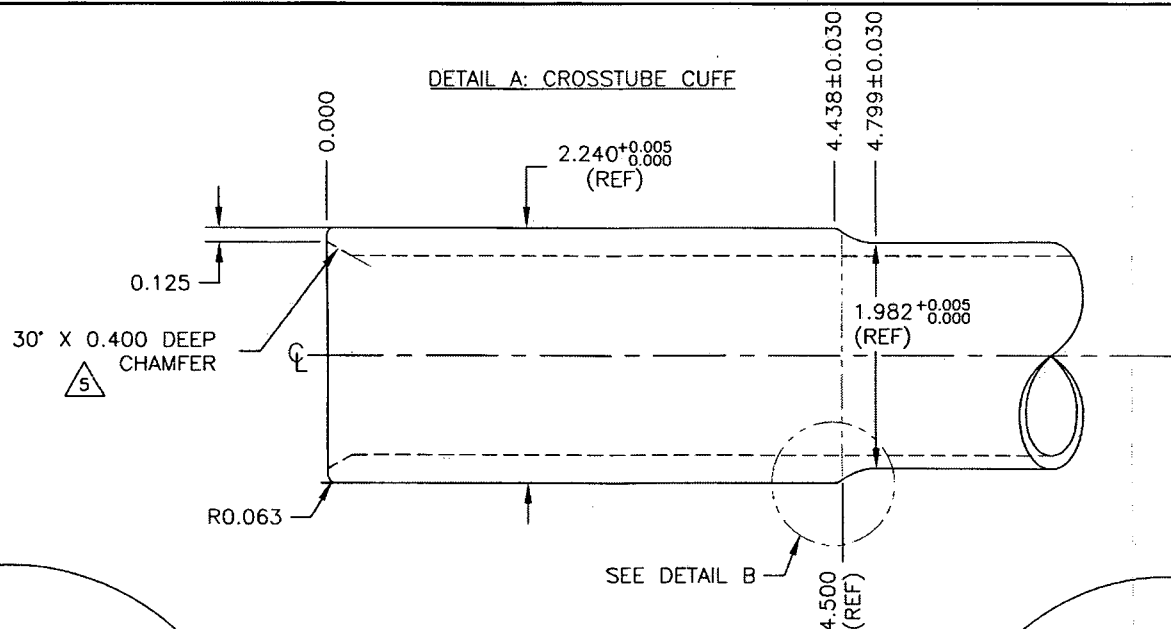


RELEASED
05-07-26

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DATE 05.07.26		CHECKED DS	APPROVED DS	TITLE CROSSTUBE ASS'Y (206L HIGH FWD)	SHEET 2 OF 3
					SCALE 1:10

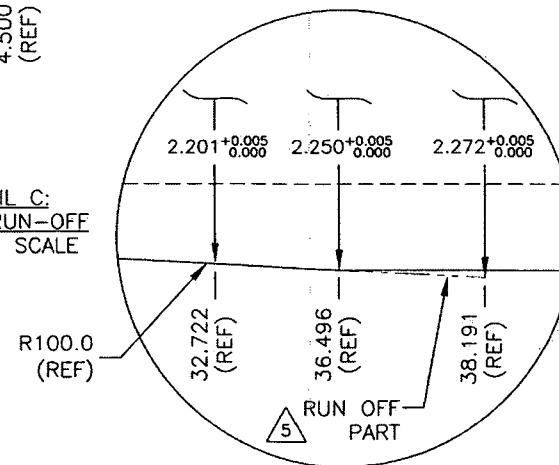
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28604

RELEASED
05.07.26 4



DETAIL B: CUFF
TRANSITION
SCALE 4:1

DETAIL C:
TAPER RUN-OFF
NOT TO SCALE

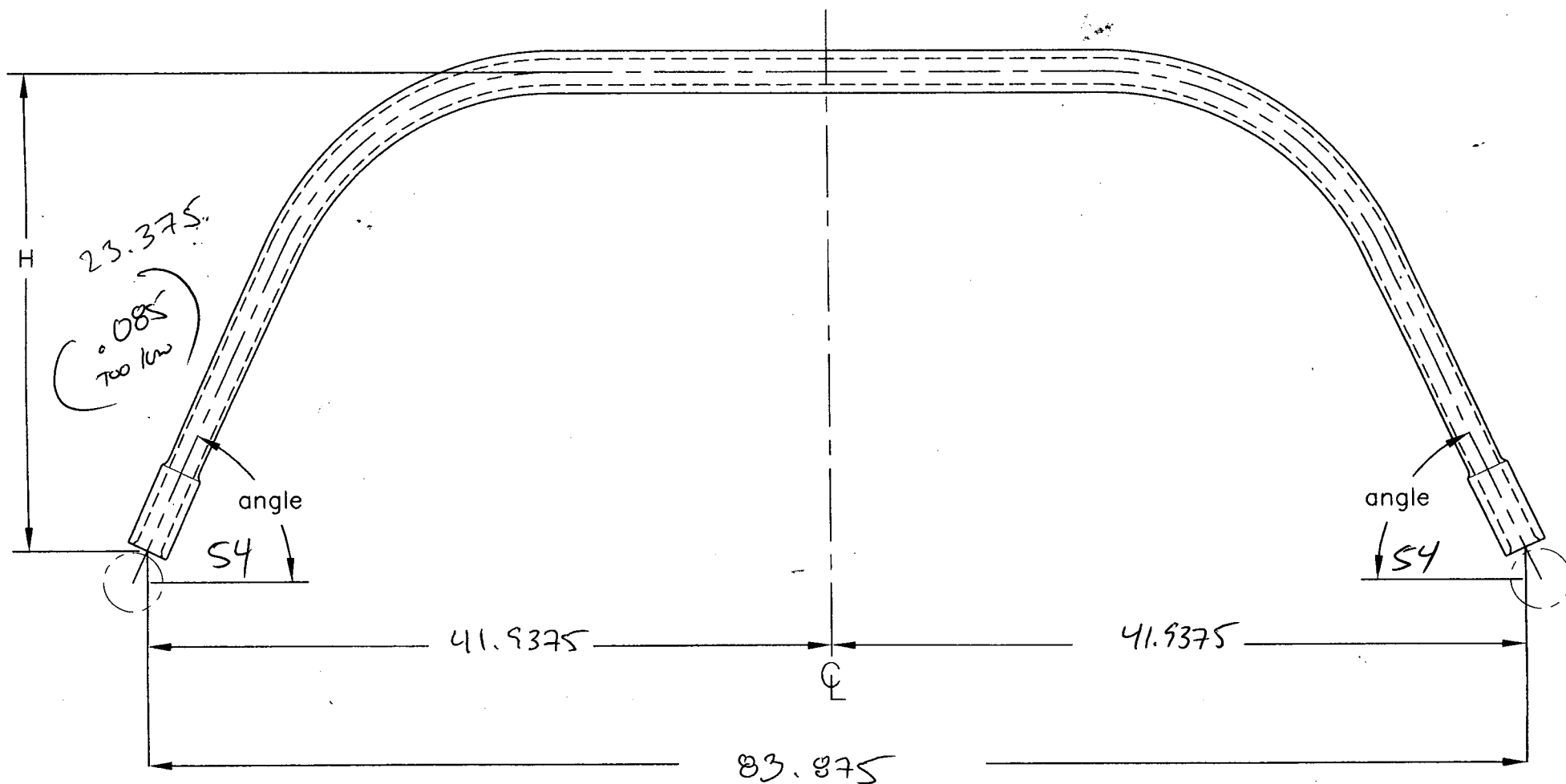


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DESIGN PH	DRAWN BY PH	DART	DART AEROSPACE LTD. WILLOWDALE, ONTARIO, CANADA
CHECKED HOS	APPROVED HOS	DRAWING NO. D206-667-143	REV. B SHEET 3 OF 3
DATE 05.07.26	TITLE CROSSTUBE ASS'Y (206L HIGH FWD)	SCALE 1:1	

NO. 25604
WORK ORDER
TRAINED COPY
IT'S JENDMFG
FROM NOTICE
STAMP COPY
DUPN TO
JUDERING



DATE: 06-04-20

DESCRIPTION: 206-667-103

BATCH NO: 25606

DRAWING: 206-667-143 Rev. B

H: 23.52

1/2 SPAN: 41.92

TOTAL SPAN: 83.84

ANGLE: 54 ± 0

[Signature]
06-04-20



HeathAir

INTERNATIONAL (1991) INC.

681 Ave. Lepine, Dorval, Québec H9P 1G3
Tél.: (514) 636-1000 • Fax: (514) 636-0031

W.O. N° 34062

A.M.O. Number: 46/90

NON-DESTRUCTIVE TESTING REPORT

AIRCRAFT / COMPONENT INFORMATION

REGISTRATION:

MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:

OPERATED BY:

BASED AT:

INSPECTION REQUIREMENTS

Carry out FPI of (8) cross tube (external surface) as per ASTM E-1417-05 and the Dart QSI 038, Section 4.1.1 (on file at client) - parts delivered to HeathAir.

Qty (2)	P/N D212-664-101	S/N's B26236 & B26237
Qty (2)	P/N D212-664-201	S/N's B26241 & B26242
Qty (1)	P/N D412-664-203	S/N B24779
Qty (1)	P/N D206-667-203	S/N B25609
Qty (2)	P/N D206-667-103	S/N's B25605 & B25606

☐ RADIOGRAPHY

☐ ULTRASONIC

☒ PENETRANT

☐ MAGNETIC PARTICLE

☐ EDDY CURRENT


INSPECTION REPORT

Fluorescent penetrant inspection was performed in accordance with the above requirements on (8) cross tubes.

Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive)
Ardrox 970P25E Batch #04B503.

(8) cross tubes PASSED inspection.

THE MAINTENANCE DESCRIBED ABOVE HAS BEEN PERFORMED IN ACCORDANCE WITH
THE APPLICABLE STANDARDS OF AIRWORTHINESS

INSPECTED BY: 

DATE April 27, 2006

INSPECTION STAMP(S) Not Required

CUSTOMER INFORMATION

CUSTOMER Dart Aerospace

ADDRESS:

P.O. NUMBER

00001076/8

CONTACT NAME:

LABOUR

@

MATERIALS

@

TRAVEL EXPENSES

@

HOTEL EXPENSES

@

GST

PST

INVOICE NO.

TOTAL \$

WHITE COPY - INSPECTION FILE • YELLOW COPY - CUSTOMER • PINK COPY - ACCOUNTANT

Date: Friday, 6/9/2006 11:00:31 AM
 User: Linda Lacelle

Process Sheet

Customer : CC-DAR01 Dart Aerospace Ltd. Drawing Name : D206-667
 Job Number : 27470
 Estimate Number : 10804
 P.O. Number : N/A Part Number : Z_CUSTOM
 This Issue : 6/9/2006 S.O. No. : N/A Drawing Number : UPDATE PAPERWORK
 Prsht Rev. : NC Project Number : N/A
 First Issue : N/A Type : N/A Drawing Revision : N/A
 Previous Run : 00015 Material : N/A
 Written By : Due Date : 6/16/2006 Qty: 1 Um: Each
 Checked & Approved By :
 Comment : *W* *x 24*

Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

AD NEW PAPERWORK TO KITS INSTOCK

DSI 9337 REV.A

D206-667-101

D206-667-103

D206-667-201

D206-667-203

B16613 B16615 B16616 B16618 B17013 B17026
B22249 B16587 B16588 B16589 B16590 B16611 B16612
B23219 B25606
B16641 B16642 B16629

2.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

INSPECT LEVEL 21

Job Completion



D206-667-101 B24244 2X

6/9/06
W 06-09-05